

## **Past, Present, and Future Landscape Change: Combining Inupiaq Knowledge and Western Science**

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The thaw lake cycle is the dominant landscape process on the Arctic Coastal Plain of Alaska. Thaw lakes currently account for 20% of the surface expression in the Western Arctic Coastal Plain and drained thaw lake basins account for 26% (Hinkel and others, 2005). Drained thaw-lake basins on the North Slope of Alaska contain significant deposits of carbon-sequestering peat (Hinkel and others, 2003). The amount of carbon stored in the thaw lake basins is an important factor in determining the future impact of global climate change in the Arctic and the rest of the planet. Our research into the dominant landscape process of the Arctic Coastal Plain of Alaska now brings Indigenous Knowledge to the forefront. Inupiaq elders have first-hand knowledge of changes in the landscape of the North Slope such as lake drainage events and it is important to document this and other knowledge for their future generations (Hinkel and others, in review).

Indigenous knowledge (IK) can provide insights for understanding thaw lake processes (and other landscape/climate processes on Arctic Coastal Plain) that can not be deduced from satellite imagery. For example, many elders can describe lake drainage mechanisms that are only apparent from the ground. Many of the knowledge holders are elderly and they can extend the study period 30 years beyond the aerial photography archives. This research also integrates community concerns about environmental change.

Interviews were video-taped in a semi-directed manner using U.S. Geological Survey topographic maps and satellite images. Interviewees were asked to identify lakes that have drained or filled-in. We cross-verified information received by incorporating other verbal accounts, by using aerial photography and satellite imagery, and field visits. After taping of an interviewee the tapes are analyzed and landscape change information was geocoded with a 6-digit code in our Indigenous Knowledge GIS Database. Later on, we have corroborated reports of lake drainage from our informants using aerial photographs, satellite images, and radiocarbon dates.

Currently, we are developing GIS layers and fine-tuning our interviewing and codifying methods. We are archiving a wide range of knowledge that elders, hunters, and other users of the tundra introduce to the interviews. Elders have identified other landscape phenomenon, such as warm springs, natural gas efflux, erosion processes, and alternative views of lake drainage and infilling.

### **Literature Cited**

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